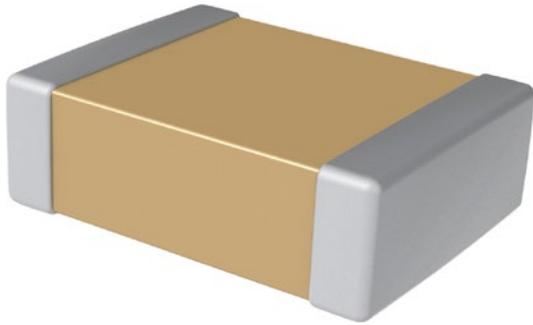


Multilayer Capacitors, SMD

Multilayer Ceramic Capacitors, 0402, X7R



SPECIFICATION:

Construction form	0402
Ceramic type	X7R
Dimensions L x H x W	1.0 x 0.5 x 0.5 mm
Temperature range	-55...+125 °C
Height	0.5 mm
Length	1.0 mm
Width	0.5 mm

PRODUCT RANGE:

Art. Nr.	Capacitance	Rated voltage	Capacitance tolerance
RND 150-0402B101K500NU	100 pF	50 VDC	±10%
RND 150-0402B103J160NU	10 nF	16 VDC	±5%
RND 150-0402B103K160NU	10 nF	16 VDC	±10%
RND 150-0402B103K250NU	10 nF	25 VDC	±10%
RND 150-0402B181K500NU	180 pF	50 VDC	±10%
RND 150-0402B221K500NU	220 pF	50 VDC	±10%
RND 150-0402B271K500NU	270 pF	50 VDC	±10%
RND 150-0402B331K500NU	330 pF	50 VDC	±10%
RND 150-0402B471K500NU	470 pF	50 VDC	±10%
RND 150-0402B561K500NU	560 pF	50 VDC	±10%
RND 150-0402B681K500NU	680 pF	50 VDC	±10%
RND 150-0402B822K500NU	8.2 nF	50 VDC	±10%

PCB design

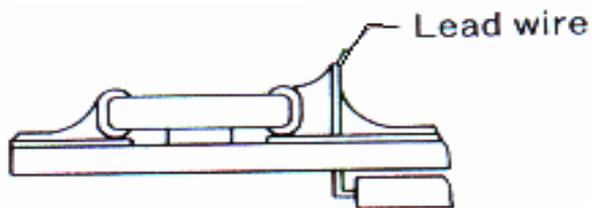
Chip components are susceptible to board stress since the component itself is mounted directly on the board. They are also sensitive to mechanical and thermal stress when solder, which may cause chip cracked.

Please take solder form and component layout into consideration to eliminate stress.

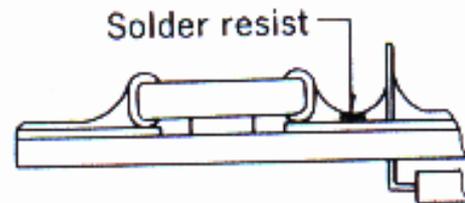
Pattern form

(1) Placing of chip components and component.

incorrect

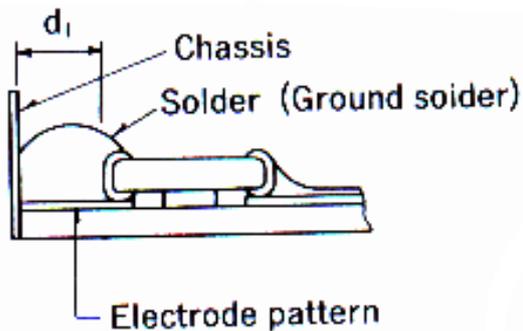


correct

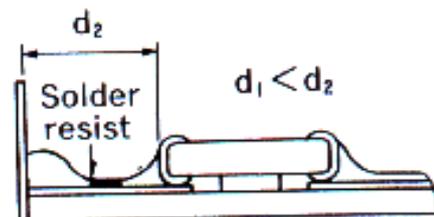


(2) Placing close to chassis.

incorrect

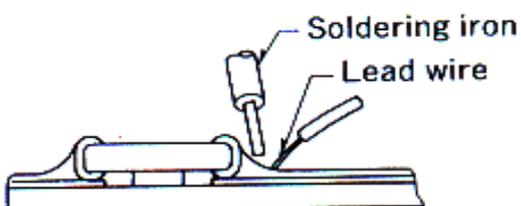


correct

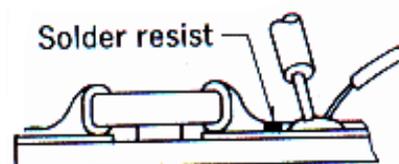


(3) Placing leaded components after chip component.

incorrect

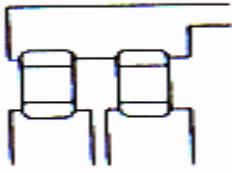


correct

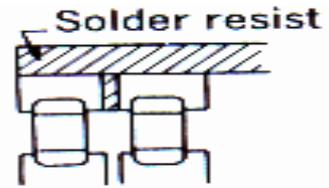


(4) Lateral mounting

incorrect



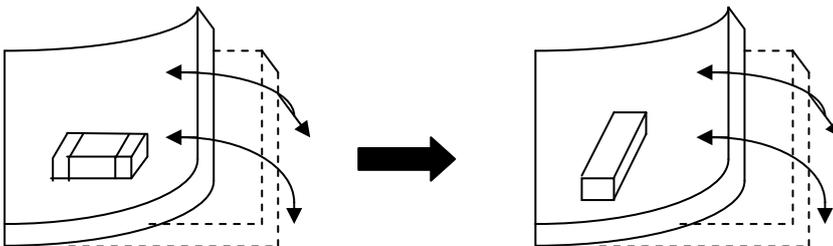
correct



Component direction

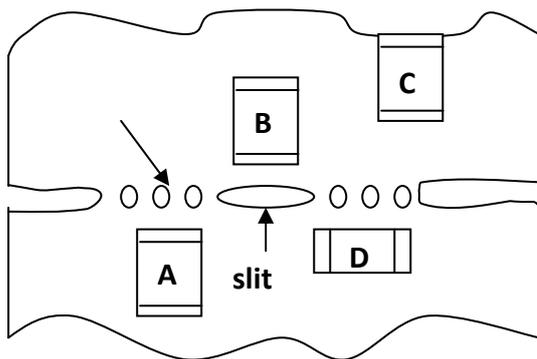
To design a mounting position that minimizes the stress imposed on the chip during flexing or bending of the board.

(1) put the component lateral to the direction in which stress acts.



(2) Component layout close to board separation point.

Susceptibility to stress in the order: $A > C > B = D$



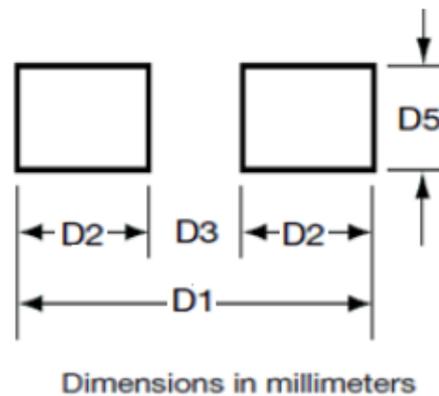
12.3. Land Pattern

When capacitors are mounted on P.C. board, the amount of solder directly affect the performance of capacitors. Therefore, the following items should be carefully considered in the design of solder land pattern.

- (1) The greater the amount of solder, the higher the stress on the chip capacitors, and lead to cracking and breaking likely. It is necessary the appropriate size and configuration of the solder pads should be designed to have proper amount of solder on the termination.

- (2) When two or more capacitors are soldered together onto the same land or pad, the pad must be designed so that each capacitor's soldering point is separated by solder-resist.

The following diagram and table for recommended pad dimensions.



Type	0201	0402	0603	0805	1206	1210	1808	1812	1825	2220	2225
D1	0.65	1.50	2.30	2.80	4.00	4.00	5.40	5.30	5.30	7.00	7.00
D2	0.21	0.50	0.80	0.90	0.90	0.90	1.05	0.90	0.90	1.35	1.35
D3	0.23	0.50	0.70	1.00	2.20	2.20	3.30	3.50	3.50	4.30	4.30
D5	0.30	0.50	0.80	1.30	1.60	2.50	2.30	3.80	6.50	5.00	6.50

Unit: mm